WHAT IS CLAIMED IS:

1. A hydrodynamic type porous oil-impregnated bearing comprising a porous bearing body formed with bearing surface on an inner peripheral surface thereof, and oil retained in pores of said bearing body by impregnation of lubricating oil or lubricating grease,

wherein said bearing surface has a first region in which a plurality of hydrodynamic pressure generating grooves inclined in one direction with respect to the axial direction are circumferentially disposed, a second region which is axially spaced from the first region and in which a plurality of hydrodynamic pressure generating grooves inclined in the other direction with respect to the axial direction are circumferentially disposed, and an annular smooth region positioned between the first and second regions.

2. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 1, wherein said bearing body is formed of a sintered metal.

3. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 2, wherein said sintered metal contains copper or iron, or both as a main component.

4. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 1, wherein percentage of area of surface openings on said smooth region is lower than that of said first and second regions.

5. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 1, wherein the axial opposite sides of said bearing surface are tapered surfaces having inner diameter increased toward the bearing ends.

6. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 1, wherein the inner peripheral surface of said bearing body is formed with a plurality of said bearing surfaces axially spaced from each other.

7. A hydrodynamic type porous oil-impregnated bearing as set forth

in Claim 1, wherein said hydrodynamic pressure generating grooves of said first region and said hydrodynamic pressure generating grooves of said second region are symmetric with respect to the axial center of said bearing surface.

8. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 1, wherein a region of said hydrodynamic pressure generating grooves and the other region in said bearing surface are simultaneously formed by a forming pattern having a shape corresponding to said bearing surface.

9. A hydrodynamic type porous oil-impregnated bearing comprising a porous bearing body being formed with a plurality of axially spaced bearing surfaces on an inner peripheral surface thereof, at least one of said plurality of bearing surfaces having inclined hydrodynamic pressure generating grooves, inner diameter of a region between said bearing surfaces being greater than inner diameter of said bearing surfaces, and oil retained in pores of said bearing body by impregnating of lubricating oil or lubricating grease.

10. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 9, wherein said bearing body is formed of a sintered metal.

11. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 10, wherein said sintered metal contains copper or iron, or both as a main component.

12. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 9, wherein the boundaries between said bearing surfaces and the region between said bearing surfaces are of level differences.

13. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 9, wherein the axial section of the region between said bearing surfaces is drawn with a curve which is continuous to said bearing surfaces.

14. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 13, wherein said curve is an arc such that its diameter is greatest at the axial center of the region between said bearing surfaces.

15. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 9, wherein outer diameter of an outer portion of said bearing body corresponding to at least one of said bearing surfaces is smaller than outer diameter of an outer portion of said bearing body corresponding to the region between said bearing surfaces.

16. A hydrodynamic type porous oil-impregnated bearing as set forth in Claim 9, wherein a region of said hydrodynamic pressure generating grooves and the other region in said bearing surface are simultaneously formed by a forming pattern having a shape corresponding to said bearing surface.

17. A method of producing a hydrodynamic type porous oil-impregnated bearing comprising a porous bearing body being formed with bearing surface on an inner peripheral surface thereof, said bearing surface having inclined hydrodynamic pressure generating grooves, and oil retained in pores of said bearing body by impregnation of lubricating oil or lubricating grease, said method comprising the steps of:

inserting a forming pattern in an inner peripheral surface of a cylindrical porous blank, said forming pattern having a first forming portion for forming a region of said hydrodynamic pressure generating grooves and a second forming portion for forming the other region in said bearing surface, applying a compacting pressure to said porous blank to press the inner peripheral surface of said porous blank against said forming pattern, thereby simultaneously forming the region of said hydrodynamic pressure generating grooves and the other region in said bearing surface on the inner peripheral surface of said porous blank.

18. A method of producing a hydrodynamic type porous oil-impregnated

bearing as set forth in claim 17, wherein said bearing surface has a first region in which a plurality of hydrodynamic pressure generating grooves inclined in one direction with respect to the axial direction are circumferentially disposed, a second region which is axially spaced from the first region and in which a plurality of hydrodynamic pressure generating grooves inclined in the other direction with respect to the axial direction are circumferentially disposed, and an annular smooth region positioned between the first and second regions.

19. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in claim 17, wherein said bearing surface has a first region in which a plurality of hydrodynamic pressure generating grooves inclined in one direction with respect to the axial direction are circumferentially disposed, a second region which is axially continuous to the first region and in which a plurality of hydrodynamic pressure generating grooves inclined in the other direction with respect to the axial direction are circumferentially disposed.

20. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in claim 17, wherein said porous blank is formed of a sintered metal.

21. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in Claim 20, wherein said sintered metal contains copper or iron, or both as a main component.

22. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in Claim 17, wherein after forming said bearing surface, releasing said forming pattern from the inner peripheral surface of said porous blank while utilizing the spring-back of said porous blank due to removal of said compacting pressure.

23. A method of producing a hydrodynamic type porous oil-impregnated bearing comprising a porous bearing body being formed with bearing surface

on an inner peripheral surface thereof, said bearing surface having inclined hydrodynamic pressure generating grooves, and oil retained in pores of said bearing body by impregnation of lubricating oil or lubricating grease, said method comprising the steps of:

disposing a forming pattern in a die, said forming pattern having a first forming poriton for forming a region of said hydrodynamic pressure generating grooves and a second forming portion for forming the other region in said bearing surface, filling powder metal material between said forming pattern and said die, applying a compacting pressure to said powder metal material to form a cylindrical compacted body, while simultaneously forming a region of said hydrodynamic pressure generating grooves and the other region in said bearing surface on an inner peripheral surface of said compacted body by said forming pattern.

24. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in claim 23, wherein said bearing surface has a first region in which a plurality of hydrodynamic pressure generating grooves inclined in one direction with respect to the axial direction are circumferentially disposed, a second region which is axially spaced from the first region and in which a plurality of hydrodynamic pressure generating grooves inclined in the other direction with respect to the axial direction are circumferentially disposed, and an annular smooth region positioned between the first and second regions.

25. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in claim 23, wherein said bearing surface has a first region in which a plurality of hydrodynamic pressure generating grooves inclined in one direction with respect to the axial direction are circumferentially disposed, a second region which is axially continuous to the first region and in which a plurality of hydrodynamic pressure generating grooves inclined in the other direction with respect to the

axial direction are circumferentially disposed.

26. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in Claim 23, wherein said powder metal material contains copper or iron, or both as a main component.

27. A method of producing a hydrodynamic type porous oil-impregnated bearing as set forth in Claim 23, wherein after forming said compacted body and said bearing surface thereof, releasing said forming pattern from the inner peripheral surface of said compacted body while utilizing the spring-back of said compacted body due to removal of said compacting pressure.

Add B1

Add C1